



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30323

Report Nos.: 50-280/87-17 and 50-281/87-17

Licensee: Virginia Electric and Power Company  
Richmond, Virginia 23261

Docket Nos.: 50-280 and 50-281

License Nos.: DPR-32 and DPR-37

Facility Name: Surry 1 and 2

Inspection Conducted: June 7 through July 4, 1987

Inspectors:	<u>T. A. Peebles for</u>	<u>7-24-87</u>
	W. E. Holland, Senior Resident Inspector	Date Signed
	<u>T. A. Peebles for</u>	<u>7-24-87</u>
	Larry E. Nicholson, Resident Inspector	Date Signed
Approved by:	<u>T. A. Peebles for</u>	<u>7-24-87</u>
	F. S. Cantrell, Section Chief	Date Signed
	Division of Reactor Projects	

SUMMARY

Scope: This routine inspection was conducted in the areas of licensee action on previous enforcement matters, plant operations, plant maintenance, plant surveillance, followup on inspector identified items, and licensee event report review.

Results: No violations or deviations were identified in this inspection report.

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## REPORT DETAILS

### 1. Licensee Employees Contacted

- \*D. L. Benson, Station Manager
- \*H. L. Miller, Assistant Station Manager
- \*E. S. Grecheck, Assistant Station Manager
- \*J. A. Bailey, Superintendent of Operations
- D. J. Burke, Superintendent of Maintenance
- S. P. Sarver, Superintendent of Health Physics
- R. H. Blount, Superintendent of Technical Services
- R. L. Johnson, Operations Supervisor
- \*J. A. Price, Site Quality Assurance Manager
- W. D. Craft, Licensing Coordinator
- G. D. Miller, Licensing Coordinator
- J. B. Logan, Supervisor, Safety and Licensing

\*Attended exit meeting

Other licensee employees contacted included control room operators, shift technical advisors, shift supervisors and other plant personnel.

The NRC Region II Division of Reactor Projects Director, L. A. Reyes and the NRC Region II Section Chief, Floyd S. Cantrell, visited the station on June 25, 1987.

### 2. Exit Interview

The inspection scope and findings were summarized on July 6, 1987, with those individuals identified by an asterisk in paragraph 1. The following new items were identified by the inspectors during this exit.

One unresolved item (paragraph 6) was identified with regards to conducting a 10 CFR 50.59 review when deviating from the FSAR (280; 281/87-17-01).

One unresolved item (paragraph 8) was identified with regards to evaluation of deficiencies noted during surveillance testing (280; 281/87-17-02).

The licensee acknowledged the inspection findings with no dissenting comments. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

### 3. Plant Status

#### Unit 1

Unit 1 began the reporting period at power. However, the unit commenced a rampdown to hot shutdown on June 8, due to an inoperable outside recirculation spray pump. The unit reached hot shutdown on that morning and arrived at cold shutdown on June 11, 1987. Repairs were accomplished and the pump was satisfactorily tested on June 21, 1987. The unit reached criticality and tied to the grid on June 22, 1987. Paragraph 6 addresses the pump repairs.

The unit operated at power until a Notification of Unusual Event was declared at 3:52 p.m. (EDT), on June 23, 1987, due to a measured reactor coolant system leakage in excess of 40 gpm. The leak was isolated by backseating all main loop stop valves and the unusual event was secured at 7:00 p.m. (EDT), that evening. The unit was subsequently placed in cold shutdown. Paragraph 6 addresses the main loop stop valve packing repair. Repairs were accomplished and the unit was taken critical on June 28, 1987. The unit recommenced power operation that evening and operated at power for the remainder of the inspection period.

#### Unit 2

Unit 2 began the reporting period at power. The unit operated at power for the duration of the inspection period.

#### 4. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Unresolved Item (URI) 280; 281/87-13-01, Review of licensee justification for backseating loop stop valves during normal operation.

The issue was identified in inspection report 280; 281/87-13. The issue involved backseating of the subject valves during normal operation which appeared to be in conflict with the valve technical manual and vendor's recommendation. Since the issue was identified, the licensee has conducted an engineering evaluation of the concern. That evaluation was documented in Engineering Work Request (EWR) 87-256. The EWR was reviewed and approved by the station safety committee on June 26, 1987. In that report, the licensee concluded, in part, that backseating of the loop stop valves to 1/16" deflection maximum during operation is an acceptable practice and will be continued. The EWR also included a vendor letter which also stated that backseating to 1/16" deflection maximum is acceptable and would not cause valve damage. The inspector reviewed the EWR. This item is closed.

#### 5. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. Two new unresolved items are identified in paragraphs 6 and 8.

#### 6. Plant Operations

##### Operational Safety Verification (71707)

The inspector conducted daily inspections in the following areas: control room staffing, access, and operator behavior; operator adherence to approved procedures, technical specifications, and limiting conditions for operations; examination of panels containing instrumentation and other reactor protection system elements to determine that required channels are operable; review of control room operator logs, operating orders, plant deviation reports, tagout logs, jumper logs, and tags on components to verify compliance with approved procedures.

The inspector conducted weekly inspections in the following areas: verification of operability of selected ESF systems by valve alignment, breaker positions, condition of equipment or component(s), and operability of instrumentation and support items essential to system actuation or performance.

Plant tours were conducted which included observation of general plant/equipment conditions, fire protection and preventative measures, control of activities in progress, radiation protection controls, physical security controls, plant housekeeping conditions/cleanliness, and missile hazards.

The inspector conducted biweekly inspections in the following areas: verification review and walkdown of safety-related tagout(s) in effect; review of sampling program (e.g., primary and secondary coolant samples, boric acid tank samples, plant liquid and gaseous samples); observation of control room shift turnover; review of implementation of the plant problem identification system; verification of selected portions of containment isolation lineup(s); and verification that notices to workers are posted as required by 10 CFR 19.

Certain tours were conducted on backshifts or weekends. Backshift or weekend tours were conducted on June 8, 15, 21, 23, 28, and 29. Inspections included areas in the Units 1 and 2 cable vaults, vital battery rooms, steam safeguards areas, Unit 1 containment, emergency switchgear rooms, diesel generator rooms, control room, auxiliary building, cable penetration areas, independent spent fuel storage facility, low level intake structure, and safeguards valve pit and pump pit areas. Reactor coolant system leak rates were reviewed to ensure that detected or suspected leakage from the system was recorded, investigated, and evaluated and that appropriate actions were taken, if required. The inspectors routinely independently calculated RCS leak rates using the NRC Independent Measurements Leak Rate Program (RCSLK9). On a regular basis, radiation work permits (RWPs) were reviewed and specific work activities were monitored to assure they were being conducted per the RWPs. Selected radiation protection instruments were periodically checked, and equipment operability and calibration frequency were verified.

In the course of monthly activities, the inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: protected and vital areas access controls; searching of personnel, packages and vehicles; badge issuance and retrieval; escorting of visitors; and patrols and compensatory posts.

#### Engineered Safety Feature System Walkdown (71710)

The inspector performed a walkdown of the accessible areas of the vital and emergency electrical system for both units to verify its operability. This verification included the following: confirmation that the licensee's system lineup procedure matches plant drawings and actual plant configuration; hangers and supports are operable; housekeeping is adequate; valves and/or breakers in the system are installed correctly and appear to be operable; fire protection/prevention is adequate; major system components are properly labeled and appear to be operable; instrumentation

is properly installed, calibrated and functioning; and valves and/or breakers are in correct position as required by plant procedure and unit status. During the system walkdown the inspector noted that the H and J bus crossconnect breakers (5H1) were racked out; however, the inspector also had determined that the FSAR, paragraph 8.4.1 required that these breakers be removed from the cubicles. This condition was identified to the licensee and a request was made for the 10 CFR 50.59 safety evaluation. The inspection period ended prior to the licensee providing the evaluation. This issue is unresolved (280; 281/87-17-01) pending the inspectors review of the evaluation.

Within the areas inspected, no violations or deviations were identified.

#### 7. Maintenance Inspections (62703)

During the reporting period, the inspectors reviewed maintenance activities to assure compliance with the appropriate procedures. Inspection areas included the following:

##### Outside Recirculating Spray Pump (1-RS-P-2B)

The outside recirculating spray pump 1-RS-P-1B was declared inoperable due to high vibration and high discharge pressure in accordance with the acceptance criteria of surveillance test procedure 1-PT-17.3. This pump is a vertical, two stage centrifugal pump with a capacity of 3500 gpm at a design head of 249 feet. Each pump has 50% of the spray capacity necessary to return the containment to subatmospheric conditions following a design basis accident.

The repair work for this pump was performed in accordance with maintenance procedure MMP-C-RS-091, "Disassembly, Inspection and Reassembly of Outside Recirculating Spray Pumps". The inspector followed the job on a daily basis both at the jobsite and at the daily management status meetings. Results of the pump inspection revealed foreign material (bolts, nuts, etc.) lodged in the pump internals. The licensee also discovered the pump shaft runnouts to be out of tolerance as well as evidence of eccentric loading. The inspector reviewed the corrective actions documented on the appropriate engineering work requests and work orders. Although the procedure was generally adequate to perform this complex job, the licensee agreed that a subsequent revision to incorporate specific items learned during this effort is appropriate. No discrepancies were noted.

##### Main Loop Stop Valve Packing Replacement

On June 23, 1987, Unit 1 shut down due to excessive identified leakage at one of the reactor coolant loop stop valves (MOV-1593). Immediate corrective action during the shutdown was to backseat the loop stop isolation valves in order to stop the leak. The unit was operating with the loop stop valves approximately 1/8" off the backseat since repair of a broken loop stop valve in May 1987 (see inspection report 280; 281/87-13). Corrective action during this outage was to repack two of the loop stop valves (MOV-1591 and MOV-1593). Also, the vendor was contacted concerning the maximum torque specified in the technical manual for the packing gland follower bolts. The torque specified in the manual was a maximum of 70 to

80 ft-lbs. Additional discussions with the vendor indicated that this value was too low and should have been a maximum of 350 ft-lbs. This information resulted in the licensee retorquing all of the loop stop isolation valve packing gland follower bolts to 225 ft-lbs. Also, the vendor stated that backseating of the valves to 1/16" maximum spring pack deflection during operation was acceptable. This issue is addressed in paragraph 4 of this report. The inspector reviewed the appropriate work packages and verified that the loop stop valves were backseated no more than 1/16" deflection during a containment entry at normal operating temperature and pressure (hot shutdown) on June 28, 1987.

Within the areas inspected, no violations or deviations were identified.

#### 8. Surveillance Inspections (61726, 61700)

During the reporting period, the inspectors reviewed various surveillance activities to assure compliance with the appropriate procedures as follows:

- Test prerequisites were met.
- Tests were performed in accordance with approved procedures.
- Test procedures appeared to perform their intended function.
- Adequate coordination existed among personnel involved in the test.
- Test data was properly collected and recorded.

Inspection areas included the following:

##### Turbine-driven Auxiliary Feedwater Pump

On June 22, 1987, the inspector witnessed surveillance testing of the turbine-driven auxiliary feedwater pump 1-FW-P-2 per periodic test 1-PT-15.1C. This test demonstrates the operability of the subject AFW pump with the unit stable at greater than 2% power. The test was run using the train "B" steam admission valve SOV-MS-102B following a modification to the upstream steam drain system. This modification was to improve the steam drain system following a problem with overspeed trips on this pump as detailed in inspection report 87-13. No discrepancies were noted.

##### Safety Injection Train Undervoltage Functional Test

The inspector reviewed the below tests that functionally verified the engineered safeguards feature of each safety injection train simultaneously with an undervoltage condition on the appropriate emergency bus. The specific tests reviewed were performed during the 1986 refueling outages for both units. This review focused primarily on the documentation, evaluation, and corrective actions performed as a result of the subject tests. The following items were identified during the review:

a. General Comments:

- Surveillance testing required by the technical specification is sometimes being performed in maintenance procedures. This policy bypasses much of the review and approval process required for periodic tests as delineated in administrative procedure SUADM-ADM-21, "Station Procedures". Specifically, Technical Specification 4.6.A.1.b requires that testing demonstrate that the loss of voltage and degraded voltage protection is defeated whenever the emergency diesel is the sole source of power to an emergency bus and that this protection is automatically reinstated when the diesel output breaker is opened. The licensee stated that this test is performed by maintenance procedures 1-EMP-PRT-35, 50, 52, and 33 for Unit 1 and 2-EMP-PRT-73, 72, 86, & 87 for Unit 2.
- The majority of items discovered during this review imply a failure to adequately document and evaluate test problems and discrepancies as they occurred. Section 6 of each test procedure requires that a station deviation be submitted for every component that fails to perform as indicated. No cross reference to station deviations are provided with the completed test package, therefore making it very difficult to confirm proper evaluation. A licensee search of station records was in progress when the inspection period ended.

b. 1-PT-18.2A, "Safety Injection Train A - H Bus Undervoltage Functional Test" completed 7-7-86.

- The test results on the test critique sheet is marked "unsatisfactory". The acceptance criteria that are signed in section 6 of the test requires a station deviation to be generated for each failed component and noted on the test critique sheet. The only corrective action annotated on the test critique sheet for the many problems encountered is: "issued appropriate wr's." with a work order number 359265. This work order addresses only one component, 1-VS-MOD-100B, and concludes that the procedure was in error.
- The completed test results were not reviewed by the surveillance and test engineering group as required by station administrative procedure SUADM-ADM-21 and as committed to by the licensee response to the Notice of Violation included in Inspection Report 50-280,281/86-05.
- Acceptance criteria step 6.6 was deleted with no reason for deviation stated as required by administrative procedure SUADM-ADM-21.
- Signoff for procedure step 5.24.4 was not made that verifies the emergency diesel generator was secured and restored in accordance with the appropriate procedure.

- The licensee provided the inspector with a special test (1-ST-189) that was performed as a retest following the above test. The inspector noted that there is no traceability between the problems encountered in the original test and the subsequent special test, especially since no purpose is given in the special test. This is of particular concern since the special test addresses only a small fraction of the problems annotated on the original test critique sheet. The retest by means of a special test does not include the results review and approval required by the original periodic test. It was also noted that the performance of this special test was not identified in the Monthly Operating Report to the NRC as required by administrative procedure SUADM-0-18.
- c. 1-PT-18.2B, "Safety Injection Train B - J Bus Undervoltage Functional Test", completed 7-6-86.
- The test results were determined to be "unsatisfactory" as annotated on the test critique sheet. No corrective action was taken or initiated since the two components that failed to respond as required were determined to be from a procedure problem only. Administrative procedure SUADM-ADM-21 requires that a request to change procedure form be initiated and evaluated for possible inclusion in the next procedure revision. The licensee could not locate the appropriate change request form, nor were the items corrected in the March 17, 1987 revision to the procedure.
  - A review of the test results revealed that valve SOV-IA-103 did not respond as required by Attachment III of the subject test. This deficiency was not annotated on the test critique sheet nor evaluated via a station deviation.
  - A review of the March 17, 1987 revision to the subject procedure revealed several component actuations that were altered with no revision bar in the margin to flag the change during the approval process.
- d. 2-PT-18.2A, "Safety Injection Train A - H Bus Undervoltage Functional Test" completed 11-23-86.
- The problem identified on the test critique sheet, as well as the items changed on a procedure deviation, were all evaluated as "procedure problems". It appears that no procedure request change was initiated or evaluated. The revision to the procedure issued March 17, 1987, did not correct the items identified.
- e. 2-PT-18.2B, "Safety Injection Train B - J Bus Undervoltage Functional Test", completed 11-21-86.
- Technical Specification 4.11.B.3 states that all valves required to operate on a safety injection signal shall be tested for operability and paragraph 4.11.A.2 states that these valves



shall have completed their stroke. No verification exists that valve MOV 2867D was actuated with a safety injection signal.

- Verification that fan 2-FS-F-43 will stop as required on a safety injection signal was not performed. Technical Specification 4.12.B.2 requires that automatic shutdown be demonstrated.
- The test critique sheet listed several components that failed to perform as required with the corrective action as "submitted procedure change request". The licensee can not locate an applicable procedure change request, nor was the subject components required response modified in the procedure revision issued March 17, 1987.
- The test critique sheet states that charging pump 2-CH-P-1A failed to actuate as required, and that retest will be required. The inspector could find no evidence that this deficiency was subsequently evaluated and corrected.

The above items indicate a general lack of systematic identification, evaluation, and corrective action for deficiencies noted during this test. These findings were discussed with the licensee on June 29, 1987. This item is identified as an unresolved item pending the licensee search for additional documentation (280; 281/ 87-17-02).

Within the areas inspected, no violations or deviations were identified.

#### 8. Followup on Inspector Identified Items (92701)

(Closed) Inspector Followup Item 280/85-25-01, Correction of Kaman radiation monitor display. The issue involved disparities between the process vent Victoreen and Kaman radiation display monitors which were observed by the inspector during review on an event in which a gaseous release occurred. The licensee's corrective action included procurement of new hardware to correct the Kaman display. The inspector verified that the licensee was implementing the corrective action; and, although the action was not complete, the inspector considers that this item is closed.

#### 9. Licensee Event Report (LER) Review (92700)

The inspector reviewed the LERs listed below to ascertain whether NRC reporting requirements were being met and to determine appropriateness of the corrective action(s). The inspector's review also included followup on implementation of corrective action and review of licensee documentation that all required corrective action(s) were complete.

(Closed) LER 280/86-20, Limitorque E. Q. Uncertainty. The issue involved identification of questionable wiring of Limitorque motor valve operators as outlined in IEN 86-03. This area was reviewed by an environmental qualification inspection team in June 1986, and the results of their findings are documented in inspection report 280; 281/86-12. In that report an unresolved item (280; 281/86-12-01) was identified with regards

to the licensee's response to IEN 86-03. After discussion of this LER with regional inspectors, the inspector concluded that corrective actions for this item will be reviewed as part of the resolution of the unresolved item. This item is closed.

(Closed) LER 280/86-28, Inoperable IRPIs. The issue involved movement of the Unit 1 individual rod position indicators down approximately 25 steps during plant startup. The cause of this condition was failure of the normal negative power supply. Alternate power automatically was available, but this supply was at a reduced voltage causing IRPI to indicate low. Corrective action included replacement and calibration of the negative power supply. In addition, calibration of the IRPI power supplies was added to the IRPI refueling periodic test. This item is closed.

(Closed) LER 280/281/86-32, Inoperable Charging Pump Service Water Subsystem and Control and Relay Room Chillers Due to Loss of Service Water. The issue involved loss of the subject system due to air being introduced into the system when a newly installed SW supply line was valved in without insuring that the new line was full of water. Corrective action included alignment of the normal flowpath and venting of affected pumps. The system was returned to service in approximately 12 minutes. Additional corrective action includes installation of vents in the new line to allow for proper venting. This item is closed.

(Closed) LER 280/86-36, Failure to Perform Type B Testing of RSHE Due to Inadequate Testing Capability. The issue involved failure to test pressure retaining rubber gaskets on recirculation spray heat exchangers per the requirements of 10 CFR 50, Appendix J. Corrective action included replacement of the heat exchanger diaphragms with thicker diaphragms. This action eliminated the need for testing. The inspector verified corrective action was accomplished. This item is closed.

(Closed) LER 281/85-03, Failure of Recirculation Spray Valves. The issue involved identification of inoperable outside recirculation spray pump suction valves during performance of a type C test on the valves. Also the outside recirculation spray pump discharge valve was found to be inoperable during a test 12 days later. The cause of the failures was determined to be failed or loose linkage from the remote operator(s) for the valve(s). Corrective action included refurbishment of the valve(s) operator linkage. In addition, valve testing procedures were modified to insure verification of proper valve movement. The inspector reviewed the licensee's corrective actions. This item is closed.

(Closed) LER 281/86-13, Partial Engineered Safety Feature Actuations Due to Loss of Main Feed Pump Caused by Loss of Lube Oil Pressure and Loss of Suction Pressure Due to Misaligned Valves. The issue involved actuation of two Unit 2 engineered safety features (motor driven auxiliary feedwater pumps start and steam generator blowdown (SGBD) trip valve closure) due to tripping of a main feed pump (MFP) breaker. This event occurred due to cycling of the MFP auxiliary oil pump due to the pump control being in auto. Also, approximately 12 hours later the auxiliary feedwater pump

discharge isolation valves opened and the SGBD trip valves shut. This event occurred due to operations personnel closing a mislabeled suction valve to the main feed pump. Corrective action included correction of the labeling on the condensate valves and changing of the procedure to require changing the MFP auxiliary lube oil pump control to manual for maintaining of steam generator level with the condensate pump(s). The inspector verified that corrective actions were completed. This item is closed.